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Graphis maomingensis, a new lichenized fungus from China

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Abstract—*Graphis maomingensis* sp. nov. is described from Guangdong Province, eastern China. It is characterized by a concealed disc, striate labia, *striatula*-morph lirellae, completely carbonized proper exciple, and hyaline transversely 15-21-septate ascospores. The important characters of this species are illustrated. All materials are conserved in the Lichen Section of Botanical Herbarium, Shandong Normal University.

Key words—*Graphidaceae,* new species, *Ostropales,* taxonomy

Introduction

Graphis Adans. (*Graphidaceae*) belongs to *Ostropales*, which is the largest order within *Ostropomycetidae*, *Ascomycota* (Lumbsch & Huhndorf 2007, Kirk & al. 2008). The taxonomy of the genus (Staiger 2002) as revised by Lücking (2009) is characterized by sessile to immersed lirellae with well-developed labia, a carbonized excipulum, mostly non-inspersed hymenium, and hyaline, I+ violet-blue, distoseptate ascospores with lens-shaped lumina.

Worldwide, *Graphis* includes about 460 species (Feuerstein & al. 2016). In China, about 75 *Graphis* species have been recorded (Guo & Hur 2015, Joshi & al. 2015, Jia & Lücking 2017). During our study of the lichen flora of Mt. Datianding in Maoming, Guangdong Province, China, a new species of *Graphis* was found, described here as *G. maomingensis*.

[#] Lu-Lu Zhang & Meng-Zhu Yang contributed equally to this work.

Materials & methods

The specimens studied are conserved in the Lichen Section of Botanical Herbarium, Shandong Normal University, Jinan, China (SDNU). The materials were examined and measured using an Olympus SZ51 stereomicroscope, with the apothecial anatomy observed using an Olympus CX41 polarizing microscope. Morphological characters were photographed using Olympus SZX16 and BX61 (DP72) cameras. Spot colour tests and thin-layer chromatography (TLC, using solvent system C) followed standard lichen substance analysis protocols (Orange & al. 2010).

Taxonomy

Graphis maomingensis Meng Z. Yang & Lu L. Zhang, **sp. nov.** Pl. 1

MycoBank MB 824948

Differs from *Graphis bifera* by its *striatula*-morph lirellae and striate labia.

Type: China, Guangdong Province, Maoming City, Xinyi County, Mt. Datianding, 22°17′N 110°12′E, alt. 1700 m, on bark, 5.XI.2010, coll. Li Ming, 20106911 (**Holotype**, SDNU).

Etymology: The specific epithet '*maomingensis*' refers to Maoming, Guangdong Province, where the species was found.

Thallus corticolous, crustose, continuous, pallid to grey, smooth, tightly attached to the substratum, without isidia and soralia. Apothecia lirelliform, short to elongate, single, 0.5-5.5 × 0.2-0.4 mm, sessile, thalline margin basal or absent, scattered over the thallus, labia striate, non-pruinose; disc concealed, lirellae *striatula*-morph. Proper exciple conspicuous, completely carbonized, 33-139 µm thick; epithecium 14-27 µm high, brownish; hymenium clear, 139-163 µm high, I-; hypothecium brownish, 18-37 µm high. Paraphyses simple, 1-1.5 µm diam., apices unbranched; asci cylindrical to clavate, 2-4-spored; ascospores hyaline, ellipsoid, transversely septate, 16-22-locular, 54-87 × 6-10 µm, I+ violet, with a 5-7 µm thick halo.

Chemistry: K-, PD-, C-; no lichen compounds detected.

Additional specimens examined (all in SDNU): **China, Guangdong Province, Maoming City,** Xinyi County, Mt. Datianding, alt. 1700 m, 5.XI.2010, M. Li. 20106735, 20107687, 20106957, 20106890, 20107527A, 20107000, 20106954, 20106915, 20106889, 20106998, 20106955, 20106733, 20107455, 20107673, 20107654, 20107596; X.R. Kou 20107059; D.F. Jiang 20106683, 20107946A, 20107947A, 20107104, 20107815, 20106994, 20106683A, 20107946, 20107661, 20107059, 20107194; H.Y. Wang 20107520, 20107521, 20106612, 20107521A, 20107204, 20107221A, 20107256, 20107212, 20107518, 20107279, 20107553, 20107227, 20107064, 20107605, 20107552, 20107282, 20107549, 20106839, 20107548, 20107521B, 20106668, 20107582, 20107251, 20107217A, 20107064A, 20107598, 20107558, 20107276, 20107217, 20107520A.

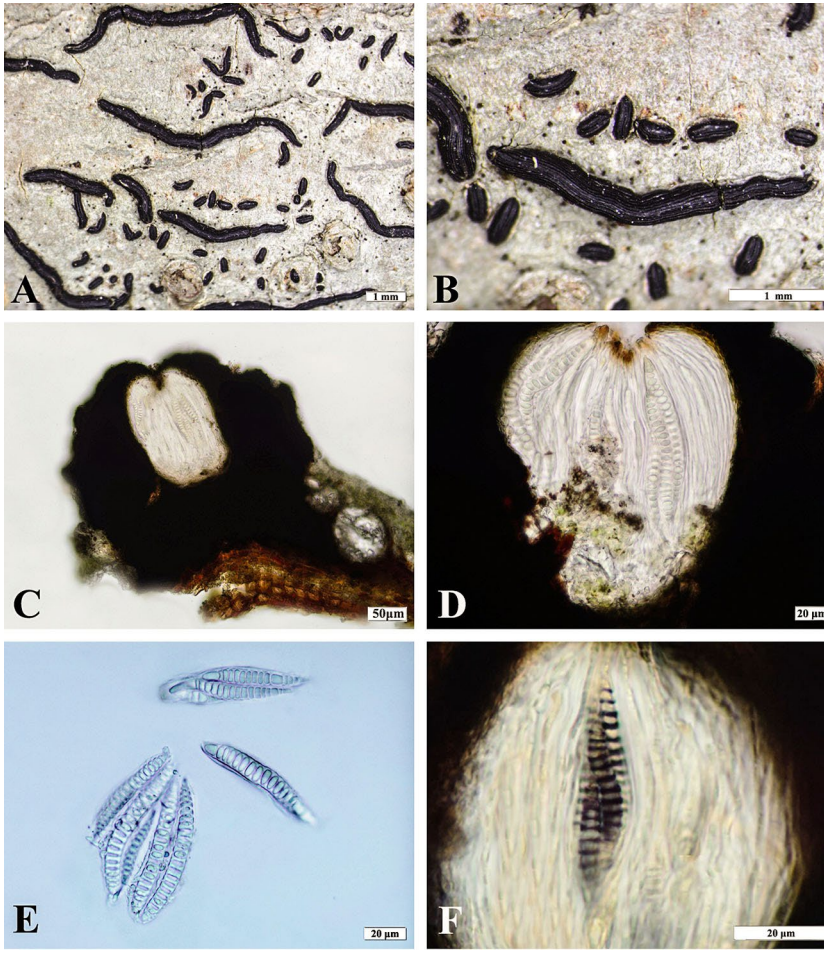

Plate 1. ***Graphis maomingensis*** (holotype). A, B. Thallus on bark; C, D. Section of apothecium; E. Ascospores; F. Ascospores I+ violet. Scale bars: A, B = 1 mm; C = 50 μm; D–F = 20 μm.

Ecology: *Graphis maomingensis* is known only from Datianding Mountain, Maoming City, Guangdong Province, growing on barks of various deciduous trees.

Comments: The new species is distinguished by its concealed disc, *striatula*-morph lirellae, completely carbonized proper exciple, and 2–4-spored asci. Other *Graphis* species differ from *G. maomingensis* by

6–8-spored asci (*G. contortuplicata;* Lücking & al. 2009), 8-spored asci (*G. striatula;* Archer 2006), *nuda*-morph (very short and unbranched) lirellae and entire labia (*G. bifera;* Lücking & al. 2009), or shorter (25–45 µm) ascospores (*G. duplicata;* Lücking & al. 2009).

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Literature cited

Archer AW. 2006. The lichen family *Graphidaceae* in Australia. Bibliotheca Lichenologica 94: 90.

Feuerstein SC, Koch NM, Lucheta F, Vargas VMF, Da Silveira RMB. 2016: A new species of *Graphis* (*Graphidaceae*: lichenized *Ascomycota*) and a revised key of the genus in Rio Grande do Sul, southern Brazil. Phytotaxa 289(3): 271–278. http://dx.doi.org/10.11646/phytotaxa.289.3.7

Guo W, Hur JS. 2015: *Graphis hongkongensis* sp. nov. and other *Graphis* spp. new to Hong Kong. Mycotaxon 130(2): 429–436. http://dx.doi.org/10.5248/130.429

Jia ZF, Lücking R. 2017: Resolving the species of the lichen genus *Graphina* Müll. Arg. in China, with some new combinations. MycoKeys 25: 13–29. http://dx.doi.org/10.3897/mycokeys.25.13154

Joshi S, Upreti DK, Wang XY, Hur JS. 2015: *Graphis yunnanensis* (*Ostropales*, *Graphidaceae*), a new lichen species from China. Mycobiology 43(2): 118–121. http://dx.doi.org/10.5941/MYCO.2015.43.2.118

Kirk PM, Cannon PF, Minter DW, Stalpers JA. 2008. Ainsworth and Bisby's dictionary of the fungi. 10th edition. CAB International Publishing, Wallingford 771 p.

Lücking R. 2009. The taxonomy of the genus *Graphis* sensu Staiger (*Ascomycota*: *Ostropales*: *Graphidaceae*). Lichenologist 41: 319–362. http://dx.doi.org/10.1017/S0024282909008524

Lücking R, Archer AW, Aptroot A. 2009. A world-wide key to the genus *Graphis* (*Ostropales: Graphidaceae*). Lichenologist 41(4):363-452. https://doi.org/10.1017/S0024282909008305

Lumbsch HT, Huhndorf SM. 2007. Outline of *Ascomycota* – 2007. Myconet 13: 1–58.

Orange A, James PW, White FJ. 2010. Microchemical methods for the identification of lichens. 2nd edition. London: British Lichen Society.

Staiger B. 2002. Die Flechtenfamilie *Graphidaceae*. Studien in Richtung einer natürlicheren Gliederung. Bibliotheca Lichenologica 85. 526 p.